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10/804,342

03/19/2004

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06/07/2007

EXAMINER

DOVE, TRACY MAE

ART UNIT

PAPER NUMBER

1745

MAIL DATE

DELIVERY MODE

06/07/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/804,342

Applicant(s)

JOHNSON ET AL.

Examiner

Tracy Dove

Art Unit

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 21 March 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

This Office Action is in response to the communication filed on 3/21/07. Applicant's arguments have been considered, but are not persuasive. Claims 1-6 are pending. This Action is made FINAL, as necessitated by amendment.

#### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-4 and 6 are rejected under 35 U.S.C. 102(e) as being anticipated by Margiott et al., US 2005/0164069 A1.

Margiott teaches a fuel cell power plant comprising a plurality of fuel cells that utilize recycle fuel from a fuel exit (partially depleted fuel). A fuel recycle impeller may be a turbocompressor driven by an air exhaust (abstract). Note an anode being fed hydrogen-rich fuel is admitted prior art (page 3 of the specification). Also a cathode having reactant gas flow fields which receive air from a pump is admitted prior art (page 4 of the specification).

Thus the claims are anticipated.

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Keefer, US 2003/0143448.

Keefer teaches a fuel cell power generation system that includes a fuel cell having an anode inlet and exhaust and a cathode inlet and exhaust. The system also includes a gas separation means operable to recover hydrogen gas from the anode exhaust and to provide at least a portion of such hydrogen gas for recycle to the anode inlet (abstract). The fuel cell has an electrolyte membrane in communication with the anode and cathode channel for facilitating ion transport between the anode and cathode channels (0023). The hydrogen gas separation system includes a compressor and a drive system for the compressor that includes means for recovering energy from the hydrogen gas separation system. The drive system may be a gas turbine coupled to the hydrogen gas separation system (0019). The energy recovery means translates the recovered thermal and pressure energy into a drive force for operating the compressor. At least one of the fuel enriched gas stream or fuel depleted gas stream may be re-circulated to a gas turbine system coupled to a compressor to capture the recirculation stream's energy (0020). Oxidant is supplied to the cathode channels (0023). Also a cathode having reactant gas flow fields which receive air from a pump is admitted prior art (page 4 of the specification). Fuel cell heat recovery may be performed by a heat engine using anode gases or hydrogen as thermodynamic working fluid. The heat engine powers gas compression required for operation of the hydrogen recycle system to enhance fuel cell performance (0049).

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Keefer does not explicitly state the fuel cell power generation system including a gas separation means to recycle hydrogen fuel contains a proton exchange membrane fuel cell.

However, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made because proton exchange membrane fuel cells use hydrogen fuel as the anode gas reactant. One of skill would have found it obvious to use the hydrogen gas separation means for hydrogen gas recycle of Keefer for a system containing a proton exchange membrane fuel cell in view of the fact that proton exchange membrane fuel cells and solid oxide fuel cells both use hydrogen containing fuels for the anode gas. Furthermore, Keefer at least suggests as much at paragraph [0046], which discloses the cogenerated or stored hydrogen as fuel may be used as fuel for a polymer electrolyte membrane fuel cell (proton exchange membrane).

#### ***Response to Amendment***

The declaration under 37 CFR 1.132 filed 3/21/07 is insufficient to overcome the rejection of claims 1-4 based upon Margiott as set forth in the last Office action. The declaration states Margiott discloses fuel recycle impellers which include only a pump 30, an ejector 30b or an electrochemical hydrogen pump 30c. The declaration states Margiott does not disclose a turbocompressor in the fuel recycle loop. It is unclear how the declaration reaches this conclusion regarding the teachings of Margiott. The abstract of Margiott discloses a fuel cell power plant including a recycle fuel from a fuel exit and a fuel recycle impeller. The impeller may be a turbocompressor driven by an air exhaust. Therefore, Margiott does teach and disclose the last paragraph of claim 1 of the present application.

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The declaration under 37 CFR 1.132 filed 3/21/07 is insufficient to overcome the rejection of claims 1-4 based upon Keefer as set forth in the last Office action. The declaration states the turbine of Keefer is driven by anode exhaust, which is opposite to the last paragraph of claim 1 of the present application. However, Keefer teaches at least one of the fuel enriched gas stream or fuel depleted gas stream may be re-circulated to a gas turbine system coupled to a compressor to capture the recirculation stream's energy (0020). Furthermore, Keefer teaches fuel cell heat recovery may be performed by a heat engine using anode gases or hydrogen as thermodynamic working fluid. The heat engine powers gas compression required for operation of the hydrogen recycle system to enhance fuel cell performance (0049).

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tracy Dove whose telephone number is 571-272-1285. The examiner can normally be reached on Monday-Thursday (9:00-7:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

June 1, 2007



**TRACY DOVE**  
**PRIMARY EXAMINER**